# INTRODUCTION:
## IRENE HEIM – BIOGRAPHICAL NOTES[*]

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For over thirty years, Irene Heim has been a star among stars in the field of semantics and in linguistics as a whole. Her published research alone would place her among the most brilliant contributors to the field, having played a key role in the establishment of semantic research as central to the enterprise of generative linguistics. But Heim's contribution includes much more. First of all, there are the manuscripts, handouts and pedagogical material that circulate throughout the field — almost as influential as her publications. Then there are the amazing number of formal advisor-advisee relationships (over 70 at last count, including 31 as a Ph.D.-thesis supervisor) and Heim's many other informal long-term academic connections with colleagues, some rooted deeply in her biography. Finally, there is the debt that the field owes to Heim and her long-time friend and collaborator Angelika Kratzer for two incalculable services to the field: their textbook *Semantics in Generative Grammar* (perhaps the most influential book of its kind in modern linguistics) and the journal *Natural Language Semantics*.

Irene Heim was born on October 30th, 1954 in Munich, Germany. Her parents had emigrated from the German-speaking area of Czechoslovakia to Munich after the end of World War II. Both of Heim's parents worked as high-school teachers in Munich, where Heim and her five brothers and sisters grew up. It was a very musical family, where amateur music-making was a constant part of everyday life. Heim's father played violin and viola, and her mother played piano. (In fact, they met through music.) Two of Heim's brothers are professional cellists (with the Bergen Philharmonic and the Munich Symphony), but despite childhood violin lessons (Angelika Kratzer remembers her playing duets with Arnim von Stechow, an amateur oboist), Heim somehow bucked the trend and became a semanticist.

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[*]In these brief notes, we can offer only a glimpse of Irene Heim's biography to help place her many contributions in context. To keep the volumes in which these notes appear a surprise, we have not consulted with Irene on the contents and so the notes may contain some errors – we apologize in advance. We entwined into the notes some of the recollections shared generously with us by Irene's friends, in particular, Angelika Kratzer, Arnim von Stechow, and Thomas Ede Zimmermann. Special thanks to Kai von Fintel and Danny Fox for important contributions to the text of this biographical note.

Heim completed her primary and secondary education in Munich, where her grades qualified her to receive a university fellowship from the German government reserved for promising high-school graduates. Heim entered the University of Konstanz, where she was supervised by Arnim von Stechow, and the Ludwig-Maximilian University of Munich, where she studied under Eike von Savigny among others prior to coming to Konstanz ("an ordinary-language philosophy hardliner," we are informed by Thomas Ede Zimmermann). In Konstanz, her colleagues included Thomas Ede Zimmermann, Rainer Bäuerle, and Angelika Kratzer. Zimmermann's first encounter with Heim in Konstanz was in the fall of 1973 in a popular course by Gottfried Gabriel. After the first session a student with thick curls covering her eyes asked Gabriel in a heavy south German accent whether she should try harder or give up on the subject altogether. Although Gabriel recommended the latter without hesitation, the student came back the following week, involving herself in discussions as if nothing happened, much to Zimmermann's surprise. And she soon became a star both with linguists and philosophers, as Arnim von Stechow remembers. She graduated in 1978 with a Magister Artium in Linguistics and Philosophy with a minor in mathematics from the Ludwig-Maximilian University of Munich.

The same year, Heim moved to the United States to enter the graduate program in linguistics at the University of Massachusetts (UMass) at Amherst (1978-1982), where she wrote her famous dissertation, *The Semantics of Definite and Indefinite Noun Phrases*, under the direction of Barbara Partee. Like her years in Konstanz, her years in Amherst were something of a semantic golden age (the first of many). Her colleagues among the students at UMass included Gennaro Chierchia, Mats Rooth, Elisabet Engdahl and Paul Hirschbühler, among others.

The dissertation, brilliant in its own right, also marked a turning point in the role of semantic theory within generative grammar, tightly integrating formal semantics with some of the most recent developments in syntactic theory — a development that was to transform the landscape of linguistics over the next three decades. When Heim entered the field in the late 1970s, the research communities that studied syntax and semantics were independent to an extent that is hard to even recall today. Heim's dissertation changed all that in a stroke. The dissertation showed how the formal tools developed for semantic analysis by her teachers and colleagues could be combined with the most recent proposals from the field of syntax to solve some of the most intractable and long-standing problems in linguistics.

The opening chapter lays out, in Heim's inimitable lucid prose, the severe problems in the interpretation of pronouns and other anaphoric expressions that had been introduced to contemporary researchers by the philosopher Peter Geach (reviving puzzles well-known to medieval semanticists and logicians) and that had proven to be virtually insurmountable given traditional analyses of the most basic semantic concepts of quantification and variable binding. The dissertation then proceeds in two substantial chapters to solve these problems in two quite different (albeit related) ways. Heim proposed to treat indefinite noun phrases not as existential quantifiers but as predicates. In the second chapter of her dissertation, she integrated this proposal with the model of syntax-semantics interaction that was then being developed within Chomskyan generative syntax—one of the first sustained demonstrations that one can do formal semantics in tight integration with the kind of formal syntax being developed under the rubric of 'Principles and Parameters' theory ('Government-Binding' theory).

As if that was not enough, in the third chapter, she presented an entirely different approach to the same set of ideas: *File Change Semantics*, in which meanings are analyzed as context-change potentials (file change potentials) (see also Heim 1983a). In this framework sentences affect the

context, where the standard notion of context is enriched by allowing discourse referents to be introduced and tracked, and specific information to be associated with them. This machinery allowed Heim to account for the interpretation of indefinites and pronouns (but see Heim 1990a) without recourse to a special level of representation, in contrast to some alternative, contemporaneous, closely related approaches such as Kamp's Discourse Representation Theory.

The Heim/Kamp model set the stage for most of the work conducted in the field in the 80s and early 90s. It is hard to exaggerate its impact on semantic theory. Within a year or two, innumerable books, dissertations and journal articles presupposed the Heim/Kamp model and used it to understand additional phenomena. The core concepts of the theory—existential closure, unselective binding, quantificational variability—to this day form part of the basic tool kit in semantics, and are taught to beginning graduate students everywhere in the world.

The degree to which this work changed the world of linguistics as whole can also hardly be overestimated. One has only to compare, for example, the content of a syntax or semantics journal or proceedings volume from 1980 with the corresponding volume a decade later, to see the change immediately. And, needless to say, in the references of almost every publication relevant to this comparison, one will find Heim's work. Google Scholar suggests that Heim's dissertation is the second most cited dissertation in theoretical linguistics (second only to Ross's): look for yourself!

The completion of Heim's dissertation was the occasion of a "long and sad story" mentioned in its acknowledgments—a story that could only have taken place in the dark days before computer word processing, the very epitome of "grad school nightmare." The entire dissertation, equations and all, had to be re-typed from scratch in a very short amount of time, when the infamous 'ruler lady' of UMass ruled that the margins of the original version were not all they should be. Heim survived, however, as did her lavishly thanked typist, and the rest is history.

On completion of her PhD, Heim moved to Stanford University as a 1981–82 Sloan post-doctoral fellow (a fellow fellow was Mürvet Enç), and the following year she held a similar fellowship at MIT. In 1983, Heim accepted a position at the University of Texas, Austin, where she remained until 1987, when she moved to University of California at Los Angeles (UCLA). Her colleagues in Austin included Hans Kamp, and her first semantics students there were Toshiyuki Ogihara and Maria Bittner, beginning the long tradition of famous semanticists educated by Heim.

After two years at UCLA, Heim returned to Massachusetts to take up a faculty position at MIT, where her *Wanderjahre* came to an end. At MIT, she was promoted to Associate Professor with tenure in 1992, and to Professor in 1997. One year in the 1990s, she took a break from MIT to teach at UMass.

In the years since her dissertation, Heim's research in formal semantics has spanned almost the full breadth of the discipline. Known for its precision, clarity, and innovation, it exemplifies both the art and the craft of semantics that has served as an example to her students and her colleagues. Many researchers who have made the kind of impact that Heim has made find it difficult to sustain the initial level of productivity and creativity throughout their career. But nothing of this sort could be said of Heim. This is reflected by her continuous contributions to semantics over the years, some (but not all) of which we briefly discuss below.

The first domains of inquiry on which Heim's work had a truly fundamental impact, touched upon in the above discussion of the Heim/Kamp model, were the theory of presupposition and the theory of indefinites and anaphora (Heim 1983b, 1990b, 1992). Her work in these domains set the agenda for the area that is today known as *dynamic semantics*. Subsequently, in her paper 'E-type Pronouns and Donkey Anaphora' (Heim 1990a), Heim completely rethought the

Heim/Kamp model in light of Situation Semantics, and launched an entire literature devoted to the development and comparison of Heim's multiple, contrasting proposals. All in all, Heim's analysis of presupposition, indefinites, and anaphora was unparalleled at the time not only in its depth, uniformity and analytic virtuosity, but also for its effect on the field to this day.

There is another domain of inquiry related to presupposition which was, however, not so much influenced by Heim as it was brought into being by her, specifically, by her work on the definite article (Heim 1991). In this paper, Heim formulates the principle that when choosing among contextually-equivalent alternative expressions, one is required to choose the one that triggers the strongest presuppositions, *Maximize Presupposition*. The principle has been shown to be widely applicable and can be used to provide a uniform explanation of a variety of apparently unrelated phenomena.

Heim's work on questions started early in her graduate career with her influential paper on the pragmatic approach to concealed questions in which she discovered and accounted for important ambiguities in the interpretation of concealed questions (Heim 1979). Subsequently, she formulated a definitive analysis of embedded questions in an enriched Karttunen semantics of questions (Heim 1994b) as well as, more recently, a new analysis of functional readings of questions that ingeniously combines a presuppositional treatment of wh-words and independently motivated insights from syntax (Heim 2012).

Degree semantics is a topic Heim has returned to several times throughout her career, especially in the context of the syntax and semantics of comparatives, superlatives, and antonyms. Ever since her initial papers and lecture notes on comparatives and superlatives, she has forcibly argued for particular movement of comparatives and superlatives, which has brought us closer to capturing the observed ambiguities in comparatives and superlatives (Heim 1985, 1999, 2001). She has also argued that there is more structure in comparative clauses than commonly assumed, which has brought us closer to understanding the interpretation of quantificational elements in comparative clauses (Heim 2006b). A further strain in her work on degree semantics involves her work on the decomposition of antonyms (Heim 2006a, 2008a).

Heim's work on Binding Theory has earned semantics a central place in this area by showing how semantics could make precise intuitions that syntacticians struggled with. The two papers on reciprocals by Heim, Lasnik and May (Heim et al. 1991b,a) are perfect examples of how a close collaboration among syntacticians and semanticists can lead to profound insights on the nature of grammar. Another influential long-term project of Heim's engaged with the contributions of Tanya Reinhart and showed how Reinhart's work on coreference and binding could be better understood with the lambda-calculus (Heim 1993, 2009). Finally, Heim has also made an important contribution to temporal semantics in Heim (1994b), a careful study and re-formulation of the influential work on tense by Dorit Abusch. In particular, she clarified the connections between tense and variable binding by investigating feature deletion. In her later work on bound variable pronouns she investigated the same issue in more depth for bound variable pronouns (Heim 2008b).

The twenty-eight papers contributed to this volume encompass all the topics mentioned above as well as some further topics that were transformed by Heim's work but are not mentioned (VP ellipsis, NPI licensing, etc). They provide not only a fitting tribute to Heim but also a sample of her enormous influence on research in semantics and related areas.

Heim's place in the semantic firmament would have been secured long ago by her findings and ideas alone —— but the significance of her overall contribution is not limited to her brilliant

record of transformative, creative research. Heim is also one of the field's greatest teachers and commentators, and has transformed the field as much through the astonishing clarity of her thinking as through its content. Heim's papers are famously the most lucid work in the field. Each of her publications (from her dissertation to the latest work) is as pedagogically profound as it is original. Pedagogy and research, for Heim, are inseparable. She clearly believes that one cannot advance on a problem until one understands it thoroughly, and one cannot claim to understand a semantic problem if one cannot explain it to others — and embed it properly in a larger picture of how meaning is constructed. It should therefore come as no surprise that Heim's classroom teaching and advising are world-famous, nor that several generations of today's most eminent semanticists are Heim's former students (and in some cases, students of her students). It should also come as no surprise that Heim's amazing class lecture notes circulate widely throughout the field, extending the benefits of her lucid teaching far beyond the walls of her own classrooms and office.

It would be fair to say that the MIT linguistics department had a very limited footprint in semantics before Heim's arrival in 1989. Through the 1970s and well into the 1980s, MIT's graduate program included no regular curriculum in semantics whatsoever (though, of course, semantic questions were often central to research in syntax and other areas). With the arrival at MIT in 1981 of semanticist and philosopher James Higginbotham the idea gradually arose that semantics should take its place alongside syntax and phonology as part of the educational core — a novel idea at most institutions of the day with the exception of UMass and a few other departments. It is thanks in large measure to Heim and the many students that she has trained, that MIT is now one of the world's leading centers for research and training in semantics, formal pragmatics and the semantics-syntax interface. It is of course now almost inconceivable to imagine a department anywhere that would wish to train students in theoretical linguistics without a major focus on semantics — and this too is to a great degree the personal achievement of Irene Heim and close colleagues of her generation.

But the influence of Heim's intellectual and pedagogical vision does not end here either. In continuing collaboration with Angelika Kratzer, she has also helped to create and shape an infrastructure for semantics teaching and research that has had a profound and positive influence. Irene Heim and Angelika Kratzer's 1998 textbook *Semantics in Generative Grammar* for the first time offered a step-by-step introduction to formal semantics aimed at students whose interests and education also comprised generative syntax. The book is constructed so well that a student who has mastered this book is in a position to understand and make progress on actual problems in the field. However, it is not only a pedagogical accomplishment, but also at its heart a novel, stringent approach to the syntax-semantics interface. In the decade and a half since its publication, the book has become such a part of the very fabric of the field that the phrase *Heim & Kratzer* has become a technical term for an entire approach to the syntax-semantics interface. Some innovations of the book, for example the syntactic representation of lambda-operators and also the $\lambda \ldots : - . -$ notation of partial functions, have become widely used. Even textbooks written in disagreement with this approach are now written with "Heim & Kratzer" as the standard of lucidity and comprehensiveness to which they aspire.

In 1993, Heim and Kratzer also founded the journal *Natural Language Semantics*, which they edit to this day as a profound ongoing service to theoretical linguistics. Almost immediately, their journal became one of the most important and respected in the field — its articles characterized by the same standards of lucidity and originality that mark its editors' own thinking and writing. The journal has not only provided a sorely needed venue for the new publications that arose in great

quantities from the research program that its own editors helped launch, it has also seen to it that these publications are held to the very highest standard.

Finally, we must note that revolutionizing semantics, placing it at the heart of theoretical linguistics, co-writing the standard textbook, co-founding the best journal, and training an entire generation of younger semanticists were not enough for Heim. She also chaired the MIT Linguistics section from 2005 to 2008 and the Department of Linguistics and Philosophy from 2008 to 2011. Under her leadership, the department flourished, the graduate program successfully met the prospects of a new century, and yet her attention to teaching and advising never flagged. Since 2010, Heim added as a Senior Fellow several visits to the *Zukunftskolleg* of Konstanz University to her busy schedule. In 2012, Heim was recognized for her service to the field by the election as a fellow of the Linguistics Society of America.

Irene Heim deservedly commands not only the respect and admiration of all who know her, but also their great affection. Before putting down this introduction, please do not fail to watch the YouTube video of the song that the MIT Linguistics Ukulele Orchestra sang at her party when she stepped down as a department head:

<div align="center">http://www.youtube.com/watch?v=Yc10d5krcEs</div>

– and then enjoy the rest of these volumes dedicated to her and her achievements.

# References

Heim, Irene. 1979. Concealed questions. In *Semantics from different points of view*, ed. Rainer Bäuerle, Urs Egli, and Arnim von Stechow, 51–60. Berlin: Springer.

Heim, Irene. 1982. The semantics of definite and indefinite noun phrases. Doctoral Dissertation, University of Massachusetts, Amherst.

Heim, Irene. 1983a. File Change Semantics and the Familiarity Theory of Definiteness. In *Meaning, Use, and Interpretation of Language*, ed. Rainer Bäuerle, Christian Schwarze, and Arnim von Stechow, 164–189. Berlin: Mouton de Gruyter.

Heim, Irene. 1983b. On the projection problem for presuppositions. In *Proceedings of WCCFL 2*, ed. Daniel P. Flickinger, 114–125. Palo Alto, CA: CSLI Publications.

Heim, Irene. 1984. A note on negative polarity and downward entailingness. In *Proceedings of NELS 14*, ed. Charles Jones and Peter Sells, 98–107. Amherst, Mass.: GLSA Publications.

Heim, Irene. 1985. Notes on comparatives and related matters. Manuscript, University of Texas, Austin.

Heim, Irene. 1987. Where does the definiteness restriction apply? evidence from the definiteness of variables. In *The representation of (in)definiteness*, ed. Eric J. Reuland and Alice G. B. ter Meulen, 21–42. Cambridge, Mass.: MIT Press.

Heim, Irene. 1990a. E-type pronouns and donkey anaphora. *Linguistics and Philosophy* 13:137–178.

Heim, Irene. 1990b. Presupposition projection. In *Reader for the Nijmegen Workshop on Presupposition, Lexical Meaning, and Discourse Processes*. University of Nijmegen.

Heim, Irene. 1991. Artikel und Definitheit. In *Semantik: Ein internationales Handbuch der zeitgenössischen Forschung*, ed. Arnim von Stechow and Dieter Wunderlich, 487–535. Mouton de Gruyter.

Heim, Irene. 1992. Presupposition projection and the semantics of attitude verbs. *Journal of Semantics* 9:183–221.

Heim, Irene. 1993. Anaphora and semantic interpretation: A reinterpretation of Reinhart's approach. SfS Report 07-93, University of Tübingen. (Reprinted as Heim 1998).

Heim, Irene. 1994b. Interrogative semantics and Karttunen's semantics for *know*. In *Proceedings of IATL 1*, ed. Rhonna Buchalla and Anita Mittwoch, 128–144. Jerusalem: Akademon Press.

Heim, Irene. 1997. Predicates or formulas? evidence from ellipsis. In *Proceedings of SALT 7*, ed. Aaron Lawson and Eun Cho, 197–221. Ithaca, N.Y.: CLC Publications.

Heim, Irene. 1998. Anaphora and semantic interpretation: A reinterpretation of Reinhart's approach. In *The interpretive tract, MITWPL 25*, ed. Uli Sauerland and Orin Percus, 205–246. Cambridge, Mass.: MIT Working Papers in Linguistics.

Heim, Irene. 1999. Notes on superlatives. Manuscript, MIT.

Heim, Irene. 2001. Degree operators and scope. In *Audiatur vox sapientiae. a festschrift for Arnim von Stechow*, ed. Caroline Fery and Wolfgang Sternefeld, 214–239. Berlin: Akademie Verlag.

Heim, Irene. 2006a. Little. In *Proceedings of SALT 16*, ed. Masayuki Gibson and Jonathan Howell, 35–58. Ithaca, N.Y.: CLC Publications.

Heim, Irene. 2006b. Remarks on comparative clauses as generalized quantifiers. Manuscript, MIT.

Heim, Irene. 2008a. Decomposing antonyms. In *Proceedings of Sinn und Bedeutung 12*, ed. Atle Grønn, 212–225.

Heim, Irene. 2008b. Features on bound pronouns. In *Phi theory*, ed. Daniel Harbour, David Adger, and Susana Béjar, 35–56. Oxford: Oxford University Press.

Heim, Irene. 2009. Forks in the Road to Rule I. In *Proceedings of NELS 38*, ed. Anisa Schardl, Martin Walkow, and Muhammad Abdurrahman, 256–284. Amherst, Mass.: GLSA Publications.

Heim, Irene. 2012. Functional readings without type-shifted nouns. Manuscript, MIT.

Heim, Irene, and Angelika Kratzer. 1998. *Semantics in generative grammar*. Oxford: Blackwell Publishers.

Heim, Irene, Howard Lasnik, and Robert May. 1991a. Reciprocity and plurality. *Linguistic Inquiry* 22:63–102.

Heim, Irene, Howard Lasnik, and Robert May. 1991b. On "reciprocal scope". *Linguistic Inquiry* 22:172–192.